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APPENDIX.

ON MR. WILLIAMS'S METHOD OF MANUFACTURING PATENT FELTED CLOTH.

By J. Duncan, Esq.

The process of manufacturing cloth by felting alone may be described as follows:—Supposing it to be required to make a carpet, twenty-seven yards in length, and six quarters, or fifty-four inches wide, of coarse wool, and of stout substance. A carding-engine, of the width of eighty inches, is, in this case, to be fed with about forty-five pounds of wool. The wool having passed through the card arrives at the last cylinder, from which the ordinary sliver is combed off as usual by the doffer. This sliver, which is very similar to a large and wide cobweb, is received upon an endless travelling web, also eighty inches wide, and about thirty-seven yards in length, the carded wool overlaying it; and when the revolution, or journey of thirty-seven yards, is accomplished, one sheet of sliver, eighty inches broad, is spread over the entire surface of the web; the operation having been repeated for about twenty times, or until the whole of the wool is thus combed, the layer, of thirty-seven yards in length, and of about twenty slivers in thickness, forms what is called a bat of wool.

The bat is then cut, coiled on a roller, and carried to a machine, called the "Hardener," which consists of two or more pairs of rollers lying upon each other, and having perforated steam-pipes between them. The bat passes down between these rollers, being moved forward by their action, while the steam from the perforated pipes is driven into the wool, which is thereby heated and moistened at the same time; all the top rollers have a slight alternating motion, which rubs the bat slightly, and causes an entanglement of the fibre, and thus the felting commences. By the time the bat has passed once through these rollers it has become thinner, and of considerable texture and strength, from the locking together and entanglement of the fibres; its second passage through the machine further improves its texture.

The next part of the process is to pass the hardened bat, or partly formed felt, through a machine, consisting of rollers in two tiers, each roller of the upper tier resting between two rollers of the under tier, the whole being immersed in a trough, or bath of soap and water; and the upper rollers have the alternating motion already adverted to, as they first revolve—say an inch, and then retrograde half an inch, and so on.

The felt having been thus well pressed, and further advanced towards completion, may be said to be in a state comparable with that of woollen cloth made with threads by the loom in the ordinary way, and like it, it is carried to the fulling or felting mill in which, after having been subjected to beating for eight hours, it becomes a firm cloth, and is ready for dyeing or printing as may be required, and, when tentered and pressed, is fit for the market. The felted cloth becomes reduced in the process to about two-thirds the size of the bale of wool, or from thirty-seven yards long by eighty inches wide, to twenty-seven yards long by fifty-four inches wide.

ON A SCREW-JOINT FOR WATER-PIPES, &c.

By Mr. A. M. Perkins.

The mode employed for joining wrought-iron gas-pipes is to cut a right-hand screw upon each extremity of every pipe, and to have corresponding sockets screwed at both ends with right-hand threads; so that a socket having been screwed on the first pipe, the overhanging part of the socket serves for the reception of the second pipe, and so on. But the pipes do not come into contact.

Mr. Perkins, in his apparatus for warming buildings by a circulation of warm water, employs a right-hand screw on the one end, and a left-hand screw on the other end, of every pipe, and uses sockets which are tapped with a right and left-hand thread at their opposite extremities.

Those ends of the pipe which are cut right-hand are left square, whereas, those ends cut left-hand are each formed as the frustrum of a cone, in other words, they have sharp or V formed edges. Therefore, when the differently formed extremities of two neighbouring pipes are held at rest by means of gas tongs, and the socket alone is turned round, the pipes simultaneously enter the socket, and ultimately forcibly meet, so that the sharp edge of the one pipe is indented into the flat surface of the adjoining. The joints thus produced have been found capable of sustaining every pressure to which they have been applied, and the pipes themselves endure, without bursting, an expansive force of 3000 lbs. on the square inch.

The same principle is applied to cast-iron pipes for water-mains, &c., the right and left-hand screws being cast on each pipe, and